B.Thushar

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EXPERIENCE

Machine learning Engineer (Remote work) ***Rootally AI*** *May 2021 – Sept 2021 (Intern)*
Sept 2021 – Present (Full-time)

- As a **Machine Learning Engineer**, Independently led the development of robust solutions for an **AI therapist app**, using **pose**, **hand**, and **face detection** models to implement a range of motion checks, **speed tracking**, **hand sign detection**, **eye tracking**, and **user activity** detection using phone sensors. Utilized post-processing filters (**Kalman, smoothing, z-score**) and optimized algorithms to handle fluctuation errors, significantly enhancing exercise tracking accuracy and reliability.
- Created a library of **250+ exercise** algorithms for pain management, fitness, stroke recovery, posture and gait analysis, and other health assessments.Collaborated with cross-functional teams to implement and update algorithms on **Android** and **iOS** platforms, while mentoring and managing interns.
- Performed EDA on user session data using **Python (Matplotlib, Seaborn**) to extract features and identify **churn patterns**. Developed strategies to enhance user engagement, reducing churn through early detection. Also prepared data and created corporate health risk reports, improving decision-making and health outcomes. Implemented image processing techniques with **OpenCV** for tongue exercises and developed a face orientation detection method using **Euler Angles** and geometric principles.
- Designed a real-time sequence matching algorithm using **Dynamic Time Warping** and **RMSE** values to compare trainers' movements, providing live **similarity scores** based on user actions.
- Conducted comprehensive experimentation with advanced **3D body** models including **SPIN**, **SHAPY**, **Expose**, and **STRAP** to enhance the accuracy and performance of body composition analysis. Leveraging insights from this rigorous testing, designed a robust machine learning pipeline using the **Expose** model integrated with the **SMPL-X** framework to calculate detailed body composition measurements from user images, estimating **body fat** content and calculating health scores.
- Deployed the ML pipeline on **Firebase Cloud Functions** with **Flask API** endpoints for real-time processing. Optimized performance through parallel computation and deployed a **GPU-optimized Docker** container on RunPod's serverless platform, reducing model inference time by **50%.**

TECHNICAL SKILLS

Coursework: Machine Learning, Data Science, EDA, Data Structures and Algorithms, OOPS Concepts, Deep Learning, Data Visualization, NLP, Image Processing.

Languages: Python, Kotlin, R,SQL.

Developer Tools: VS Code, Jupyter, Google Colab, Anaconda, Py charm, Android Studio, Firebase cloud functions, Xcode.

Technologies/Frameworks: Pandas, Numpy, Tensorflow, Keras, OpenCV, Sklearn, Seaborn, Matplotlib, Git, GitHub, Tableau, Streamlit, Flask, Docker.

Other activities: Hackathon participant [Link] [Link], data science blogger [Link], hacker rank coder **[**Link].

PROJECTS

1. **PG project: Stock price prediction using machine learning algorithms.** [link] *[2022-22]*
    - Conducted **EDA** and feature extraction for time series data. Performed advanced feature engineering by extracting 38 new features from the closing price and date features.
    - Evaluated multiple machine learning models, including linear regression, random forest, XGBoost, and LSTM, and selected the **LSTM** model as the best performer for time series data, achieving a least MAE error of **3.27**.
    - Deployed four distinct stock models into a web application hosted on **Streamlit Cloud**.

2. **M Tech project: Image processing on crops using Convolutional neural network. [**link] *[2020-21]*

- Developed a CNN-based classification model to predict leaf disease in potato crops with **97.1%** accuracy on test data, and deployed it on mobile devices.
- Trained object detection models **YOLO**, **SSD**, and **Faster R-CNN** to detect and classify diseased regions in plants, with **YOLO v3** achieving **70.1% mean average precision** in field testing.
- Engineered a program to measure plant disease severity using advanced color segmentation and morphological operations in **OpenCV**, achieving a **99%** reduction in inference time compared to other built models.

3. **Machine learning and Deep learning personal projects**

- Big Mart Sales Prediction, Loan Prediction using Machine Learning Techniques in Python and R.
- Credit Card Fraud detection using supervised and unsupervised algorithms.
- Machine learning and IOT based temperature monitoring system using z-score analysis for outlier detection.
- Developed sentiment analysis system, document retrieval system and recommendation system using Turi create and S frames in Google Colab.
- Built hands-on projects in artificial intelligence like face and emotion recognition, smart attendance system, diabetic prediction, road sign detection, object tracking, drowsiness detection, fake news detection, OCR, chatbot using nlp, speech and emotion recognition etc.

EDUCATION DETAILS

Examination	University/Institute	Year	CGPA/%
PG Diploma in AI and ML	University of Hyderabad	*2021 - 2022*	8.8
M.Tech	IIT Kharagpur	*2019 - 2021*	8.9
B.Tech	UAS, Gkvk Bangalore	*2015 - 2019*	8.23

SCHOLASTIC ACHIEVEMENT

- Secured AIR-59 in GATE *2019*

TRAINING AND CERTIFICATIONS

- IOT and Machine Learning [link] Bolt *Mar - Apr 2020*
- Machine Learning Foundations: A Case Study Approach [link] Coursera *Oct 2020*
- Convolutional Neural Networks [link] Coursera *Nov 2020*
- Machine learning and Deep learning in Python and R [link] Udemy *Dec 2020*
- Statistics for Data science [link] Great Learning *Jan 2021*
- Artificial intelligence in Python [link] Pantech Solutions *Feb - Mar 2021*
- Python for Data Science [link] Univ.ai *Sep - Oct 2021*

POSITION OF RESPONSIBILITIES

- Successfully supervised and mentored interns by providing guidance, instruction, and support throughout their internship tenure. ***(Rootally AI).***
- Engaged directly with clients to understand their needs, challenges, and requirements related to the project ***(Rootally AI).***
- Participated in regular online client meetings for requirement gathering, issue resolution, and discussion on testing reviews, ensuring clear project progress updates and alignment.
- Visited corporate health risk assessment camps to gain insights into user-product relationships and identify challenges faced by users. ***(Rootally AI).***
- NSS volunteer during the B Tech program and attended NSS camp for 8 days*(2017)*.
- Attended RAWEP camp for 1 month in Raja kallahalli village, Kolar, Karnataka *(2018).*
- Organized several awareness programs and Campaigns in the village*(2017).*